

In the Drawings:

Drawing sheet 7/9 was rejected for displaying diagonal lines in the second active domain of CH 3 instead of vertical stripes as displayed in all other active domains found in the application.

The second active domain of CH 3 was inadvertently depicted with diagonal lines. Applicant's intent was to display vertical lines of all active sites, thereby allowing the reader to distinguish the active sites from inactive sites. Applicant therefore corrects said discrepancy by attaching hereto a Replacement Drawing for sheet 7/9. The Replacement Drawing is in compliance with 37 CFR 1.84. For comparison purposes, applicant has included in this submission the original drawing in addition to the Replacement Drawing.

### REMARKS

Claims 1-9 have previously been withdrawn. Claims 10-19 are pending in the above-identified patent application. Accordingly, claims 10-19 remain for consideration in the above-identified patent application.

Claims 10-19 were rejected under the first paragraph of 35 U.S.C. § 112, allegedly for failing to comply with the written description and enablement requirements.

Claims 16 and 17 are rejected under 35 U.S.C. 102(b) as being anticipated by Visser R. et al.

Claims 10-19 were provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 2-21 and 25-27 of copending US Patent Application 09/514,513 ('513).

For comparison purposes, applicant has included in this submission the original drawing in addition to the Replacement Drawing. Applicant respectfully requests that the Examiner only enter the Replacement Drawing into the current case.

#### I. AMENDMENTS TO THE APPLICATION

Entry of the amendments to the application is respectfully requested. As detailed below, these amendments introduce no new matter.

Claim 16 is amended to traverse the 35 U.S.C. 102(b) rejection. Claim 16 is amended to change the scope of the claim from chimeric synthase gene to a chimeric isoprenoid synthase gene. As stated, the amendment adds no new matter and support for the amendment can be found on page 21 of the application.

Accordingly, entry of the amendments is respectfully requested.

II. THE REJECTION OF CLAIMS 10-19 UNDER THE FIRST PARAGRAPH OF 35 U.S.C. § 112

The Examiner rejected claims 10-19 under 35 U.S.C. 112, first paragraph as failing to comply with the written description and enablement requirement. Specifically, the Examiner argues that, at the time the application was filed, the inventors neither had possession of the claimed invention nor described in the specification subject matter enabling one skilled in the art to make and/or use the invention.

The applicant submits that the present specification establishes that applicant had possession of the above chimeric isoprenoid synthases and provides sufficient guidance for producing above chimeric isoprenoid synthases. For example, Figures 4A, 4B, and 5, demonstrate the production of several active chimeric synthase molecules. The actual reduction to practice goes beyond one specific embodiment. The results recited in the specification indicate that a considerable amount of domain exchange and single-amino-acid mutation is tolerated and is consistent with the enzymatic activity of the chimeric synthases of the invention. This is shown, for example, in Figure 4A, Figure 6, Figure 7, and Figure 8. The applicant respectfully submits that the application provides sufficient relevant identifying characteristics, as a considerable degree of structural information is provided and not merely functional information.

The Examiner argues that undue experimentation would be require to obtain DNA encoding a chimeric isoprenoid synthase comprising first and second isoprenoid sythase that are different from each other. However, the amount of experimentation in this case, if any, is not undue, because the specification provides a plurality of working examples. For example, Figures 4-8 illustrate a number of domain switching strategies as well as possible reaction products. These domain switching strategies may be applied to a variety of isoprenoid synthases to obtain chimeric isoprenoid synthases. Moreover, the specification on p.4 gives examples of isoprenoid synthases which may be used to produce chimeric isoprenoid synthases of the present invention. General methods for the production of other chimeric isoprenoid synthases are also provided on p.8, line 8 through p. 10, line 27 of the specification.

The Examiner also argues that designing chimeric proteins that modify catalytic function and alter products is highly unpredictable and therefore requires appropriate

guidance to one of skill in that art as to which domains or isoprenoid synthases when swapped or combined would be effective. In addition, the Examiner references a newly defined group of monoterpene synthases that fail to encode a conserved protein motif that is typically associated with the biochemical mechanism of the monoterpene synthases and argues that said unconserved protein motif demonstrates that not all isoprenoid synthases are similar enough to allow for general assumptions in their redesign or recombination into chimeric structures.

Applicant submits that the present invention does not claim effectiveness of a chimeric isoprenoid synthase, but rather DNA encoding a chimeric isoprenoid synthase comprising a first and second different isoprenoid synthase polypeptide. As demonstrated above, the present specification establishes that applicant has provided sufficient guidance for producing above chimeric isoprenoid synthases.

Therefore, no undue experimentation is required and claims 10-19 as amended should be allowed.

### III. THE REJECTION OF CLAIMS 16 AND 17 UNDER 35 U.S.C. 102(b)

Claims 16-17 were rejected under 35 U.S.C. 102(b) as being anticipated by Visser R. et al. Visser teaches a transformation construct comprising a chimeric synthase and a dominant selectable marker. Although applicant does not agree that the reference teaches all the limitations of claims 16-17, applicant, to expedite prosecution, amends claim 16, and thereby claim 17, as reflected above.

Therefore, applicant requests the rejection to claims 16-17 under 35 U.S.C. 102(b) be withdrawn.

### IV. THE OBVIOUSNESS-TYPE DOUBLE PATENTING REJECTION

Claims 10-19 were rejected under the judicially created obviousness-type double patenting rejection as being unpatentable over claims 2-21 and 25-27 of U.S. Patent Application 09/514,513 ('513). To overcome this rejection, applicant submits herewith a

timely terminal disclaimer in compliance with 37 C.F.R. 1.321(c), signed by a representative of the assignee in compliance with 37 C.F.F. 3.73(b).

V. CONCLUSION

Reexamination of the application as amended, reconsideration of the rejections and objections, and allowance of the claims remaining for consideration are respectfully requested.

The submitted replacement drawing clarifies an inadvertent error with regard to displaying diagonal lines instead of the correct vertical lines in the CH3 second active site. Applicant has neither added nor removed any subject matter from this application via this amended drawing.

The one month extension period for response to this Office Action expires on April 13, 2007. Applicant is filing this response after the expiration date, and therefore petition and fees applicable to a one-month extension are enclosed.

This response is being filed in accordance with recently revised 37 C.F.R. § 1.121, as set forth in 68 F.R. 38611 (June 30, 2003). If the amendment is considered to not be in compliance with recently revised 37 C.F.R. § 1.121, the Examiner is respectfully requested to contact the undersigned at his earliest possible convenience.

Respectfully submitted,

Date: Apr. 13, 2007

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